Claims

[c1] 1.A system to order a plurality of nodes associated with entities in a document, said system comprising:

a. a node generator parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities;

b. a node grouper grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n–dimensional space, wherein n is greater than one; and

c. a formatter for formatting said plurality of regions for storage.

[c2] 2.A system as per claim 1, wherein said regions are node descendant regions.

[c3] 3.A system as per claim 1, wherein said formatted regions are stored in one or more pages.

[c4] 4.A system as per claim 1, wherein said set of regions are grouped by said node grouper based upon anticipated access pattern and usage.

[c5] 5.A system as per claim 1, wherein said node grouper additionally monitors insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

[c6] 6.A system as per claim 1, wherein said document is a mark-up language based document.

[c7] 7.A system as per claim 6, wherein said mark-up language based document is an XML document.

[c8] 8.A system as per claim 1, wherein said system associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes.

[c9] 9.A system as per claim 1, wherein said system is implemented across networks.

[c10] 10.A system as per claim 9, wherein said network is any of the following: local area network, wide area network, or the Internet.

[c11] 11.A method for ordering a plurality of nodes associated with entities in a document, said method comprising:
a. parsing said entities in said document and creating a

plurality of nodes that represent said entities and relationships that exists among said entities;

b. grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n-dimensional space, wherein n is greater than one; and

c. formatting said plurality of regions for storage.

[c12] 12. A method as per claim 11, wherein said regions are node descendant regions.

[c13] 13. A method as per claim 11, wherein said formatted regions are stored in one or more pages.

[c14] 14. A method as per claim 11, wherein said set of regions are grouped based upon anticipated access pattern and usage.

[c15] 15. A method as per claim 11, wherein said method comprises the additional step of monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

[c16] 16. A method as per claim 11, wherein said document is a mark-up language based document.

[c17] 17. A method as per claim 16, wherein said mark-up language based document is an XML document.

[c18] 18. A method as per claim 11, wherein said system associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes.

[c19] 19. A method as per claim 11, wherein said method is implemented across networks.

[c20] 20. A method as per claim 19, wherein said network is any of the following: local area network, wide area network, or the Internet.

[c21] 21. A method for ordering nodes in a document via isolated ordered regions, said method comprising the steps of:
a. parsing said document;
b. creating nodes representing entities of said document and relationships that exists among said entities;
c. mapping said created nodes based upon a level and step associated with each of said nodes;
d. grouping said mapped nodes into a plurality of regions, said grouping identifying, for each of said regions, at least the following parameters: a minimum step, a minimum level, a maximum step, a maximum

level, said parameters giving a region its dimension and order within said document;

e. ordering said regions based upon ascending minimum step and minimum level;

f. calculating step range associated with each of said regions; and

g. reordering said regions based upon ascending step range, minimum level, and minimum step, said reordering reflecting parent-child relationships among said nodes.

[c22] 22. A method as per claim 21, wherein said regions are node descendant regions.

[c23] 23. A method as per claim 21, wherein said method is implemented across networks.

[c24] 24. A method as per claim 23, wherein said network is any of the following: local area network, wide area network, or the Internet.

[c25] 25. A method as per claim 21, wherein said document is a mark-up language based document.

[c26] 26. A method as per claim 25, wherein said mark-up language based document is an XML document.

[c27] 27. A method as per claim 21, wherein said method com-

prises the additional step of monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

[c28] 28. A method as per claim 21, wherein said set of regions are grouped by said node grouper based upon anticipated access pattern and usage.

[c29] 29. An article of manufacture comprising a computer usable medium having computer readable program code embodied therein which orders nodes in a document via isolated ordered regions, said medium comprising:
a. computer readable program code parsing said document;
b. computer readable program code creating nodes representing entities of said document and relationships that exists among said entities;
c. computer readable program code mapping said created nodes based upon a level and step associated with each of said nodes;
d. computer readable program code grouping said mapped nodes into a plurality of regions, said grouping identifying, for each of said regions, at least the following parameters: a minimum step, a minimum level, a

maximum step, a maximum level, said parameters giving a region its dimension and order within said document;

e. computer readable program code ordering said regions based upon ascending minimum step and minimum level;

f. computer readable program code calculating step range associated with each of said regions; and

g. computer readable program code reordering said regions based upon ascending step range, minimum level, and minimum step, said reordering reflecting parent-child relationships among said nodes.

[c30] 30. An article of manufacture as per claim 29, wherein said medium further comprises computer readable program code monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

[c31] 31. An article of manufacture as per claim 29, wherein said document is a mark-up language based document.

[c32] 32. An article of manufacture as per claim 31, wherein said mark-up language based document is an XML document.

[c33] 33.An article of manufacture as per claim 29, wherein said regions are node descendant regions.